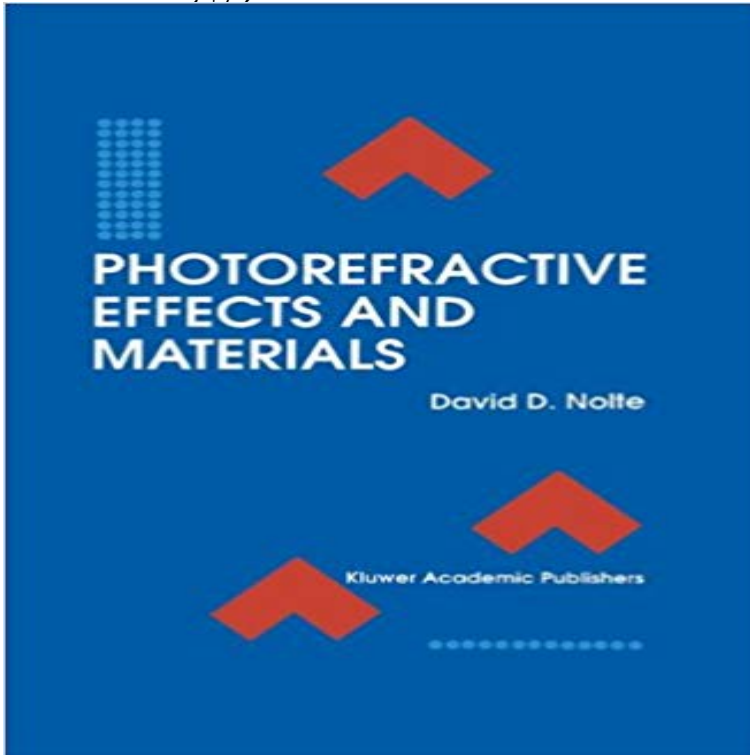


## Photorefractive Effects and Materials (Electronic Materials: Science & Technology)



The photorefractive effect is now firmly established as one of the highest-sensitivity nonlinear optical effects, making it an attractive choice for use in many optical holographic processing applications. As with all technologies based on advanced materials, the rate of progress in the development of photorefractive applications has been principally limited by the rate at which breakthroughs in materials science have supplied better photorefractive materials. The last ten years have seen an upsurge of interest in photorefractive applications because of several advances in the synthesis and growth of new and sensitive materials. This book is a collection of many of the most important recent developments in photorefractive effects and materials. The introductory chapter, which provides the necessary tools for understanding a wide variety of photorefractive phenomena, is followed by seven contributed chapters that offer views of the state-of-the-art in several different material systems. The second chapter represents the most detailed study to date on the growth and photorefractive performance of BaTiO<sub>3</sub>, one of the most important photorefractive ferroelectrics. The third chapter describes the process of permanently fixing holographic gratings in ferroelectrics, important for volumetric data storage with ultra-high data densities. The fourth chapter describes the discovery and theory of photorefractive spatial solitons. Photorefractive polymers are an exciting new class of photorefractive materials, described in the fifth chapter. Polymers have many advantages, primarily related to fabrication, that could promise a breakthrough to the marketplace because of ease and low-cost of manufacturing.

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